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A Systematic Literature Review on Technology-Based Learning Media in ECE to Face Society 5.0 Era

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Abstract
Education is a bridge between society's mastery of technology and the demands of life that are increasingly familiar with the technology. Consequently, it is essential to comprehend the readiness of the education sector, particularly the employed learning media. This study investigates the readiness of technology-based learning media in the field of early childhood education for the era of society 5.0. This study is included in systematic literature review which aims to examine articles with similar topics for review and analysis. Document identification is done by reviewing the title, abstract, and keyword of the article. Temporary, the content analysis study examines the forms and methods, components, and the advantages of media consumption. The results of study resulted in two key findings, namely a summary of the characteristics of the types of technology-based learning media that must be owned so that they are relevant to be applied in the era of society 5.0. Types of learning media that have been successfully synthesized include games, digital storytelling, LMS, augmented reality, and interactive multimedia. While the characteristics that learning media must have to be relevant to Society 5.0 include adaptive, innovative, personalized, flexible, and integrated with various innovative devices such as IoT, AI, and big data. Practical recommendations that can be used are efforts to continue upgrading skills, especially those related to technology and prioritizing elements of children's fun, attractiveness, and increasing opportunities for children to interact with technology in learning activities.

Keywords: *technology-based learning media; early childhood education; society 5.0*

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Introduction
Society 5.0 is the solution to the problems caused by the Industrial Revolution 4.0 period, which is characterized by disruption, a world in motion, uncertainty, complexity, and ambiguity; those situations are combined into a single significant keyword referring to society 5.0 (Deguchi et al., 2020). In the period of civilization 5.0, it is desired that all elements of life be interconnected in order to generate comfort (Rojas et al., 2021). Integration is directly related to global enormous data cooperation (Hauswedell et al., 2020). This era's good preparedness will be passed on optimally, with the intention of achieving comprehensive welfare (Kadarisman et al., 2022). To attain the objective of welfare, preparedness is required in every respect. Energy, transportation, medical care, retail, employment, and recreation are areas of focus. In addition to these factors, education is a factor that must not be neglected.

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In facing society 5.0 era, education must inevitably lead to a greater technological footprint (Aprilisa, 2020). Where the resolution of numerous challenges and social problems is achieved by the use of breakthroughs produced during the 4.0 industrial revolution, such as internet of things, big data, artificial intelligence, robots, and other advanced machines (Nair et al., 2021). This advanced media is optimized by the provided competent human resources, one of which is teachers. Knowledge is brought into the classroom mostly by teachers (Haug & Mork, 2021). Teachers must now provide content in a more participatory manner since society 5.0 requires the integration of technology with human endeavours. As a result of these different integrations, society 5.0 is sometimes referred to smart society or intelligent society (Nair et al., 2021). According to research undertaken by Aghnaita, 76.90% of early childhood education (PAUD) teachers are prepared to welcome society 5.0 era (Aghnaita, 2021). This number is quite high considering that more than half of teachers have claimed to be prepared for the society 5.0 era In order for PAUD teachers to be able to compete and prepare for learning in the period of society 5.0, this number must be increased further. Some talents, such as life and job skills, learning and innovation skills, information technology and media skills, and 4C skills (critical thinking, communication, creativity, and cooperation), must be refined again by teachers (Wijayati et al., 2022).

How instructors will continue to develop in the face of challenges and change will be a clear indicator of how prepared teachers are for society 5.0 (Prasetiyo et al., 2022). Education must be conducted with the intention of preparing for future changes (Kegan, 2009). Therefore, future generations must have an open perspective toward change, also known as an adaptive mindset or growth mindset (Limeri et al., 2020). Humans with a growth mindset perceive success as the product of work and learning, rather than as the result of innate ability and fate (Xu et al., 2021). People with a growth mindset believe they can accomplish anything as long as they are ready to move, try, and learn (Wilson & Conyers, 2020). This mindset will allow you to develop the ability to adapt to change, learn, and accomplish your goals.

This research involves a literature review that was chosen to summarize and evaluate a collection of papers on a specific topic. This study is based on two essential parts, including accurately reporting the findings or claims that have evolved from prior research on a subject (Cooper et al., 2019). Then, the researchers analyze the findings regarding the accuracy and completeness of the evaluated knowledge and present an evaluation of a discussion subject (Harding, 2013). By examining the entire body of the research being evaluated, the central theme can be discerned. In this research, a study will be carried out to answer problems related to what are technology-based learning media that can be used in the field of early childhood education and what are the characteristics of appropriate media to be applied in the era of society 5.0. Through relevant learning media, it is hoped that it will be able to bring added value to learning. The hope is that by using technology-based learning media, the transfer of understanding to children can be made easier and more interesting. Existing research references can be used as concrete references for the application of learning in the classroom, which is advantageous for teachers. In addition, it is also utilized to the reader's advantage to be aware of the descriptions of numerous important studies.

Mourtzis et al. (2022) performed a previous study on society 5.0 that examined the difficulties and potential of the transition from industry 4.0 to society 5.0. The research analyzes the actions undertaken by countries, the effects felt by society, and the coexistence of industry with developing trends and societal needs. However, in this study, education was not the main domain in mapping the latest findings. Research only discusses in general and makes Education a sub-discussion on other topics. The integration of society 5.0 and education is not very visible. Mainly related to the technical implementation of education itself. While the technical implementation, especially in the realm of learning in the classroom, needs to be considered and explained about what needs to be improved. Meanwhile, what appears in the paper mostly relates to the design of technology components that are more useful in the

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transitional period. The non-specific discussion of education, especially in the context of early childhood education in the previous paper, will be complemented in this research.

Aoki et al. (2019) also did research on teaching aids that can be implemented in the realm of high school scientific education, which addressed society 5.0. According to Aoki et al. (2019), society 5.0 is the response to the era of the industrial revolution 4.0, as all aspects of human life can be merged with technology in society 5.0. However, in this study the main focus was only on reviewing effective teaching aids to lay the foundation for programming knowledge in formal schools. In this study the discussion regarding the application of technology-based media for early childhood has not been discussed. In addition, the media that is focused is only limited to VR/AR with implications that are closer to science learning. Of course this can be a fresh idea in a learning approach, but the points of criteria that are suitable for early childhood have not been discussed much in this paper. Deficiencies in the discussion regarding appropriate media criteria for children are very important to examine and this will be complemented in this study.

Meanwhile, previous research with the discussion of society 5.0 which is associated with early childhood education was conducted by Aghnaita (2021). In this study, the main research objective was more focused on teacher competence in dealing with society 5.0. Several skills that need to be mastered by teachers are discussed and become the main focus of research. However, there has been no discussion that leads to the study of technology-based learning media. The discussion in writing is still very general and not specific to the realm of learning media. While the characteristics of an ideal learning media need to be studied to be able to obtain more specific information. Where technology-based learning media is a concrete effort in adapting to society 5.0. This study fills a void in the literature by focusing on technology-assisted learning material that can be exploited by teachers in early childhood education. This attempt is undertaken so that educators will be more prepared and have an open mind regarding what might be utilized in learning activities.

Based on previous research studies that have been conducted, there has been no research that discusses specifically the characteristics of learning media needs that are applied to welcome society 5.0. Several papers provide discussion of society 5.0 which only focuses on the realm of education in general. Meanwhile, studies are urgently needed regarding the types and characteristics of learning media that are relevant to the needs of learning activities in the era of society 5.0. This research will greatly support technological developments in the increasingly complex field of education. In addition, this study also aims to describe what technology-based learning media can be utilized in the field of early childhood education. This literature review study was also compiled with the main focus on knowing the characteristics of learning media that are interesting and relevant to give to children. Departing from the research objectives, two research questions were formulated, namely 1) What types of technology-based learning media are currently used? 2) What are the characteristics of interesting and relevant learning media to be given to children? Thus, both practitioners and scholars in the field of early childhood education will find this study quite beneficial. For practitioners such as early childhood teachers, principals, and curriculum developers, research data can be used to construct learning designs that are more meaningful and technologically connected

Methodology

This research is categorized as a systematic literature review with the intent of conducting a comprehensive examination of similar themes. The purpose of this paper's discussion is to make suggestions for future research according to the results of this research. Literature review is one of the branches of research since it nurtures a specific interest in a research project by employing a certain methodology and procedure. On the basis of the findings of previous studies and the identification of knowledge gaps, it is evident that the objective of this study is to provide pertinent information regarding the research topic.

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The purpose of acquiring literature pertinent to the research issue is to investigate and expand upon the types of learning media for young children that are pertinent to society's readiness for version 5.0. Web service providers such as Google Scholar, DOAJ, and Science Direct are among the sources utilized for this study. Keywords, abstracts, and title searches are utilized to identify documents. The content analysis study examines the forms and methods of media consumption, the components of media consumption, and the advantages of media consumption. Learning media, digital media, and media based on technology are used as keywords. The results obtained through keywords were then filtered based on exclusion and inclusion criteria as can be seen in Table 1.

Tabel 1. Article Exclusion and Inclusion Criteria

Inclusion	Exclusion
Articles in English or Indonesian	Same article
Articles are in the 2016-2022 timeframe	Articles in languages other than English or Indonesian
The research topic relates to technology-based media	Exclude research articles originating from thesis/thesis/dissertation, or presentation reports
Focus on early childhood education	Articles that do not specifically discuss early childhood learning media
Discusses the form of media, how to use it, and the benefits provided by the media	

Based on the search results, there were 30 documents collected and only 19 of them met the specified inclusion criteria. The focus of the findings in the research is summarized into the author's name, year, research location, and main findings.

Result and Discussion

The articles found in the systematic review are presented in table 2.

Technology-Based Learning Media

Based on the data collection process, there are numerous study publications that explore the use of technology in education based on previous research. However, its applicability in learning media, particularly in early childhood education, remains limited. This is primarily due to the fact that the scope of this study remains 2016 to 2022. The findings of a summary selection are provided in Table 3.

Four authors conducted research on games, followed by three authors conducting research on digital books, two authors conducting research on PowerPoint, learning management systems, and augmented reality, and one author conducting research on animation shows, online circuits, robotics, computer applications, English learning applications, and 3D printing. Based on the acquired data, it is determined that the applied media tended to take the shape of games.

Four types of research-created games served as data sources for the investigation. There are also studies by (Puspitasari & Subiyanto, 2017; Rahmayanti et al., 2020; Ridwan et al., 2020; Simarmata et al., 2018). Rahmayanti's research proposes an educational game in the form of rubbish sorting with the goal of increasing children's awareness of environmental protection (Rahmayanti et al., 2020). The game features elements for presenting waste types, waste management, and domestic waste classification. Even though this game is played virtually through a mobile application, it contains a path designed to engage children's psychomotor skills. This is due to the fact that youngsters engage in activities to classify waste and dispose of it accordingly. This practice enables youngsters to transfer things from one direction to another by sliding them. Therefore, there is some synchronization between the eyes, the brain, and the hands. This is an effective method for stimulating children's psychomotor skills, particularly their fine motor skills.

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Tabel 2. Articles found in systematic reviews

No	Articles	Research Location	Main Findings
1.	(Rosmiati et al., 2020)	Surakarta area, Central Java, Indonesia	The design of instructional media with visual communication design in the form of animation must include 3 categories namely expositive, interactive and quizzes
2.	(Ariyanto & Tanto, 2021)	East Java, Indonesia	Media in the form of story books with presentation in the form of technology will really attract children's attention. Through these media can stimulate the ability to listen and convey the contents of the story by children.
3.	(Wijaya et al., 2022)	Indonesia	Learning media in the form of videos and powerpoints attract children's attention and make them more focused in listening to the material delivered by the teacher.
4.	(Muharmi, 2022)	Sumatera Utara, Indonesia	Learning media that is integrated with virtual learning is attractive to children but becomes a challenge for teachers.
5.	(Haqqi & Yafie, 2019)	East Java, Indonesia	Learning media through E-learning has a positive effect on learning activities as evidenced by improvements in both small and large group trials.
6.	(Rahmayanti et al., 2020)	Jakarta, Indonesia	Learning media in the form of waste sorting games provide a user-friendly appearance, especially for children, besides that this game is declared effective for improving children's skills in recognizing types of waste.
7.	(Ridwan et al., 2020)	Bandung, Indonesia	Learning media through the N-Ram digital game for learning geometry provides an increase in children's skills in learning geometry through installing and adjusting images accordingly, and building geometric shapes from several available geometric shapes.
8.	(Purnomo et al., 2020)	Surakarta, Indonesia	Puzzle game media developed through the Android operating system have proven effective in educating children about the importance of maintaining their health. The game is also considered to have ease of use and is also attractive in terms of content and design.
9.	(Puspitasari & Subiyanto, 2017)	Semarang, Indonesia	The learning media is in the form of animated games developed with the aim of applying the Learning to Read Without Spelling (BMTM) method. The results of the study stated that learning media had an impact on reading skills in the moderate category.
10.	(Kucirkova et al., 2021)	Wales, United Kingdom	Learning media in the form of personalized digital books with pages customized with participating children's photos, toys and favorite foods, have an impact on increasing children's interest in reading. Through this media children become more focused because the things they like appear in the story.
11.	(O'Byrne et al., 2018)	United States	Learning media in the form of digital story books are considered capable of encouraging children to organize and express ideas and knowledge in a meaningful way. Emerging digital storytellers also assist in developing traditional communication skills, fostering collaboration, and strengthening emergency literacy practices.
12.	(Yuksel-Arslan et al., 2016)	Turki	The application of learning media in the form of digital stories so that it encourages children to increase interaction in the use of technology. Through digital stories, increasing parental attention in early childhood education can also occur.
13.	(Kurniawan et al., 2019)	Indonesia	Learning media in the form of augmented reality that combines 3D animation and audio is useful for displaying teaching materials in a real way. The media display is also considered very simple and easy to use with several menus.
14.	(Nainggolan et al., 2019)	Jakarta, Indonesia	Augmented reality learning media with 3D concepts with the main objective of introducing children to interactive animal visuals.
15.	(Simarmata et al., 2018)	Medan, Indonesia	Multimedia-based learning media with the main goal of number recognition is equipped with visuals and sound. Through this media, it is hoped that it can help children to make it easier to identify numbers such as knowing, writing, and mentioning.
16.	(Saputra et al., 2020)	Lampung, Indonesia	Android-based English learning media with the aim of helping children's cognitive and communication development. The media has been tested and declared feasible to help increase children's development.
17.	(Ramadhanty et al., 2022)	Malang, Indonesia	The learning media is in the form of the Abhinaya Circuit video game which aims to improve children's gross motor development. The media is considered safe, easy, and interesting and is recognized as an alternative in improving children's gross motor skills.
18.	(Umam et al., 2019)	N/A	Learning media based on computational robotics is considered capable of facilitating understanding of computational thinking in children.
19.	(Sullivan & McCartney, 2017)	Virginia, USA	Learning media in the form of 3D printing has an influence to help children engage, express, imagine or explore. Through this media children can also learn about problem solving and critical thinking skills.

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Tabel 3. Types of Instructional Media

No	Types of Instructional Media	Total	The Form of Learning Media
1	Games	5	Mobile games, online circuit games
2	Digital storytelling	3	Mobile apps, website
3	LMS	3	Website, mobile apps
4	Augmented reality	2	Mobile apps
5	Interactive multimedia	6	Animated, powerpoint, robotics, 3D printing

The second study is conducted by (Ridwan et al., 2020) using the video game of N-ram Game. This game was designed with the intention of helping children grasp the notion of geometry. In this game, children are tasked with identifying the attributes of geometric forms. This game provides a means for youngsters to play geometry games, which are typically reserved for adults. Children can play games ranging from levels 1 to 5 on its application. Other than that, the third study is conducted by (Simarmata et al., 2018) in using a game with a health education theme for youngsters. In the game, there are two menu sections; the first is devoted to instruction, while the second is devoted to games. In the education section, children find images, text, and audio that introduce several sorts of nutritious foods. In addition, children will learn about various medical instruments, how to preserve health, and the risk of contracting various diseases if they do not take care of their bodies. Meanwhile, the game section will make reference to the content presented in the teaching portion. In each type of game, there will be opportunities to play catching food, matching images, brushing teeth, disposing of trash, and treating canker sores. In addition, the game ideas are intended to be as close as feasible to the children's interests. Through simulated practice, this is supposed to be comprehended. If the child has grasped the concept through the simulation, it will be simpler for them to apply it in the future.

The fourth research regarding games is conducted by (Puspitasari & Subiyanto, 2017). In this study, the games created emphasized reading exercises for children. The game is run using the BMTM or Learn to Read Without Spelling approach. The game consists of seven levels of seven different adventure models. Five levels comprise the main level, while the remaining two are bonus levels. The objective of the quest is to unlock all of the keys by correctly answering the questions in each level. Level 1 is the introductory adventure level for youngsters. At each stage, the children are presented with two button options, such as the learn and play buttons. The learn button opens the learning page, while the play button opens the play page. When children respond appropriately or incorrectly, the game application will provide them with verbal feedback. This game application encourages children to develop decision-making skills. In addition, the stimulation offered by games causes children to become more enthusiastic.

The range of technology-based learning material is not limited to discussions of video games; it also includes digital storytelling. In this era, books are presented in a manner that is more interactive than the traditional text format. (Kucirkova et al., 2021; O'Byrne et al., 2018; Yuksel-Arslan et al., 2016) are the three studies that raise concerns regarding digital storytelling. Kucirkova et al. (2021) focuses on the subject of personalized books. In this study, it was revealed that giving out non-personalized versus personalized books created two distinct outcomes, and specifically connected to the vocabulary level of youngsters. Personalized books provide information about the child's portrait, name, activities, and favorite playground. Parents personalize by inputting their children's information. Through personalized books, the relationship between parents and children grows closer. This is due to the intimacy of the story resulting from the child's firsthand experience and the story's personalization.

In addition, O'Byrne et al. (2018) and Yuksel-Arslan et al. (2016) did the further research pertaining to digital books. Both offer digital adaptations of conventional narrative techniques. The novelty introduced relates to technology components that can be accessible via computers

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and mobile devices. The inclusion of voice actors in the digitally packaged story is intended to lend intimacy to the tale being presented. Through digital storytelling, youngsters are also able to openly express their thoughts. PowerPoint is another media that can be utilized in technology-based instruction. Ariyanto & Tanto, (2021) dan Wijaya et al. (2022) research covers the utilization of generated PowerPoints. Ariyanto & Tanto (2021) produced a PowerPoint by mixing PowerPoint and a children's graphic book. Wijaya et al. (2022) prepared a PowerPoint presentation with a weather theme. Both endeavors strive to create non-boring learning materials with a more appealing appearance. The selection of PowerPoint is also influenced by its usability and accessibility.

LMS is also one of the currently available and widely utilized learning media options. Particularly due to the covid-19 epidemic, which necessitates the development of distance education. Muharmi (2022) research indicates that LMS enables real-time access to learning resources, constituting an added benefit. Typically, an LMS is an application or website that may be simultaneously accessible by teachers and students. In the context of early childhood education, the constructed system tries to facilitate children's access to instructional resources. The institution may create its own LMS or utilize one that is already present. Moodle, Edmodo, Schology, ruangguru.com, homelearning.go.id, tablekita.com, icando.co.id, indoneax.co.id, classpintar.id, Google courses, etc. are examples of LMS that are already available and may be accessed even for free.

Using augmented reality technology creates learning materials that are equally engaging, especially for children. In their respective studies, Kurniawan et al., 2019 and Nainggolan et al. (2019) discuss augmented reality technologies. Kurniawan et al. (2019) research demonstrates that augmented reality can be utilized to incorporate numbers, letters, character recognition, geometric shapes, etc. Access is also simplified because smartphones can be used. In addition to being available on mobile devices, augmented reality can also be implemented on PCs. In the research undertaken by Nainggolan, things are projected in 2D and 3D via augmented reality (Nainggolan et al., 2019). In addition, AR technology allows youngsters to have a more realistic understanding of animal environments and even engage with them by feeding them.

In simpler terms, media can also take the shape of animated presentations incorporating interactive multimedia. According to Rosmiati et al. (2020), animation is used for children's presentations in order they view relevant figures. Moreover, with multimedia of number recognition, digital media can be merged using computer devices (Simarmata et al., 2018). This medium allows for the explanation of numbers and letters for children. The introduction is provided step-by-step until the child is able to write coherently and without errors. Additionally, the media includes noises designed to assist children in pronouncing numerals. Children's reading skills can be stimulated in a more rapid and enjoyable manner through direct involvement (listening and attempting). Additionally, technologically-based material can be made with the intention of enhancing children's English skills. Other than that, Saputra et al. (2020) stated that English learning tool for mobile-based Android is an interactive medium based on mobile apps. The media contains a navigation element that allows children as users to access the desired page, audio, and 2D animation.

In the context of technologically-based media, it turns out that not everything is restricted to visual interactions. Some technologically-based media support the urge to move and advance despite the use of technology. Ramadhanty et al. (2022) resulted in the development of Abhinaya Circuit, an online learning game in the form of a circuit. This game consists of five posts involving zigzag running, crawling, putting the ball in the basket, practicing balance, and shuttle running. The game's five posts are designed to assist youngsters develop several aspects of physical fitness, including agility, precision, endurance, strength, speed, balance, and coordination. The development of robotics devices constitutes the next physically demanding research (Umam et al., 2019). This robotics device is designed to facilitate children's computational comprehension. Sullivan conducts the most recent study

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that provides an update on the media, in which he offers breakthroughs about 3D printing (Sullivan & McCartney, 2017). By instructing teachers on how 3D printers operate in a straightforward manner, the 3D printing in question can be accomplished. In the classroom, the objective is to introduce and show.

The globe will reach society 5.0 era in the future which leads to humans and technology coexist in this period. Increasingly, education world must adapt and transform for better through the use of technology (Meyer, 2018). The greatest difficulty in education in the age of huge technology is teachers (Haug & Mork, 2021). There are demands for teachers to be more engaged in seeking and acquiring new knowledge (Aprilisa, 2020). It is because, as the youngest generation they are considered to easily access to such vast amounts of information. Given that individuals can learn from a variety of sources, the role of the teachers is reduced to become as a facilitator. However, a facilitator must be extremely knowledgeable and have a broad understanding of the breadth of learning (Duan et al., 2019). Adapting technology in learning media for children is a skill that teachers must acquire.

The analysis of nineteen publications published between 2016 and 2022 indicates that learning media is increasingly focused on offering playing facilities. It is proven by the greater prevalence of game-based learning media compared to other types of media. The decision is made to design learning media in the form of games since they can create more comfortable settings for early children during learning activities (Rahmayanti et al., 2020). In addition, it is crucial for humans to study in a calm environment (Aziz, 2022; Firmansyah et al., 2021) which can facilitate the process of information absorption (Cooke et al., 2019). In the context of early childhood education, playing typically produces relaxed settings (Fein & Wiltz, 2021). The incorporation of knowledge into games, such as safeguarding the environment by sorting trash, recognizing the notion of geometry, and health-themed games, enables youngsters to acquire useful information without force. The enjoyment supplied by games can also encourage children's motivation to learn something new (Malone & Lepper, 2021), where the children will feel that the fundamental information they must acquire is not a frightening. Thus, the incentive to achieve the greatest possible learning results can be increased. It is possible to say that this satisfies the requirements of society 5.0 by incorporating learning into games with engaging themes. It considers that humans must continue to learn and progress in the future, and that games may be used to acquire knowledge, this is highly relevant.

Furthermore, Digital Storytelling is a learning medium that is equally as engaging game. Some classic books have been digitized and recently serve a considerably more complex purpose. The ability to combine text, images, sound, video, and animation produces excellent outcomes for a children's experience with storytelling. Storytelling is a crucial language-stimulating activity for youngsters (Kucirkova et al., 2021). Children learn, not as simply as speaking or listening only, but also to comprehend events and internalize the morals of stories. With technologies such as personalized books, the connection between children and tales will become more pronounced. Children develop by having a role in a story where the impact is greater when the narrator tells a story; thus, it can enhance their contact with other book stories (O'Byrne et al., 2018). Through digital storytelling tools, children gain greater freedom to create stories, discover new viewpoints, and become problem-solvers for the narratives they construct (Yuksel-Arslan et al., 2016). Therefore, the advantages of digital storytelling are tied to the difficulties that the alpha generation would encounter in the period of society 5.0, where humans are expected to think critically and lead. In the period of society 5.0, technology will substantially facilitate human existence; thus, the most important role that humans can play is to become empowered, active, creative, and innovative.

Living in the age of science and technology necessitates a fact-based or condition-based perspective on everything (Bulkeley et al., 2019). In a period of development, humans must continue to grow and learn (Duan et al., 2019). Therefore, in early childhood education, children should be exposed to science through engaging, hands-on activities. Children's imaginations are clarified through the use of animated programs (Rosmiati et al., 2020),

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PowerPoint presentations (Ariyanto & Tanto, 2021), and augmented reality (Kurniawan et al., 2019). It is essential to make the concept of abstract information as tangible as possible for children. This is possible with the aid of technology. Other than that, attracting children's attention through animation, PowerPoint, and augmented reality help them comprehend material. For children with a visual-auditory learning style, information absorption will be increased and accelerated. Thus, the availability of media such as animated performances, PowerPoint presentations, and augmented reality can match the demands of civilization 5.0. Note, however, that the content provided to children must be suited to their developmental stages and delivered without force. When the material presented is deemed uninteresting by the youngster, additional activities that are more relevant to the child should be presented.

In addition to technology, it is necessary to have the necessary abilities to master the technology. Meanwhile, in the society 5.0 era, the most obvious difficulty is how to regulate and master technology to ensure its continued existence and avoid extinction (Nair et al., 2021). In order to stimulate early childhood education, it is possible to provide learning media devices that encourage children to interact with technology. The multiple learning media, including LMS (Haqqi & Yafie, 2019; Muharmi, 2022), online circuit (Ramadhanty et al., 2022), robotics devices (Umam et al., 2019), interactive multimedia (Simarmata et al., 2018), English learning application (Saputra et al., 2020), and 3D printing (Sullivan & McCartney, 2017) provide children with more engaging learning interactions. The presence of learning media such as LMS contributes to the growth of education in developing nations such as Indonesia (Muharmi, 2022). In the meantime, learning media such as online circuits are fresh advances in physical motor stimulation activities for children, even when distance limits are present. Therefore, humans should utilize technology as a means to solve their problems. The technology that can be utilized for problem solver is interactive multimedia to enhance children's reading and writing skills and English learning software.

Other than that, learning media such as robotics and 3D printing also encourage the desire to acquire new knowledge, in which children can be exposed to the development of new technologies. Although the introductions are just elementary, the children already possess experience and confidence. For a nation like Indonesia, this term is incredibly significant since children must be instilled with the belief that they possess the same capability and ability to work as children from other nations from an early age (Yuliana, 2018). One of which is getting children closer to masterable creativity tasks. Children will learn through robotics assembly activities the significance of a robot and how its components are structured. Similarly, children will learn through 3D printing how a machine makes 3D objects that may be used in the real world. Therefore, teachers must first master both of these concepts before demonstrating them to the students.

Based on the results of the exposure of each article, a review of the application of the media is obtained. Referring to this, several media criteria are obtained that are considered good. Learning media in the form of games must have interactive criteria and give children the opportunity to move and not just be passive (Rahmayanti et al., 2020; Ramadhanty et al., 2022; Ridwan et al., 2020). In interactive characteristics, games must be able to facilitate children to build understanding gradually starting from the most concrete things to more abstract concepts (Blumberg et al., 2019). Interactive games are not only limited to giving children the opportunity to interact with visual buttons, visual figures, or simple sounds, but also create mutual interactions with the system. The feedback provided by the game must be more than right-wrong, lose or win, but improvements that are more sensitive, such as evaluating where the mistakes made by children are.

This is needed to spark a child's way of thinking to become more critical and provoke high curiosity. Of course this is something that will be very useful and games are not only an addiction for fun, but also function as education. This important point is supported by a statement from Rahmawati et al. (2021) where in society 5.0 the need for critical thinking is very important for every individual. Apart from that, to maintain human existence itself, great

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curiosity must continue to grow within the individual (Miwa, 2020). Someone with high curiosity has the opportunity to progress and develop more rapidly (Dubey & Griffiths, 2020). These two points are very necessary to live in the era of society 5.0.

Meanwhile, games that involve the physical, such as online circuits in the era of society 5.0, must also be integrated with innovative devices such as AR glasses or smart devices around the house so that they can support game needs. Media like this actually has important advantages in being able to facilitate the physical development of children. This is intended so that children have active movement and not only experience pressure due to stress being trapped in just one visual game condition. Learning media in the form of games must provide opportunities for children to be active. Passive games have a negative impact on health. This is as mentioned by Oliveira et al. (2020) in his research. Where active games have an impact on reducing BMI and weight. Although the effect has not been able to specifically increase physical activity, body fat, or waist circumference. But other impacts can still be felt for health, especially children's motor development. Therefore learning media with the concept of games must be designed in such a way as to provide a balance between passive pleasure (by staring at the screen) and combined with physical movement (Boj et al., 2018).

Media in the form of digital storytelling must have criteria that can be personalized or customized. The purpose of this personalization is to attract children to have a closeness to the story being told. Through personalization, children can see their own figure in the story itself. This interest will provoke more children's curiosity about the storyline. This condition indirectly motivates children to learn to understand a lot of new vocabulary and slowly begins to develop a love for reading. This is also in line with research conducted by Hamouda (2023) where stories packaged digitally with interesting storylines give children to improve their language skills, especially micro language. Interesting stories also give children motivation, opportunities to hone critical thinking skills, increase self-confidence, and great enthusiasm (Anggraeni et al., 2019; Mubarak et al., 2022).

Media in the form of LMS is recommended to have criteria to be able to have universal access, have facilities that support the learning styles of each user, be integrated with various cutting-edge IoT, and increasingly support collaborative activities. The meaning of universal access here refers to the features offered. Some LMS can sometimes only be accessed via a website or mobile application. While learning resources ideally can be accessed flexibly and quickly. Easy access is of course also beneficial for individuals with physical limitations. Access to voice assistance must, of course, be provided so that those with visual impairments can obtain the same information. Meanwhile, towards an increasingly advanced era, of course, every individual has the same opportunity to get facilities according to his personal preference (Pitula, 2021). LMS in the era of society 5; 0 must facilitate this by providing various features to facilitate the learning styles that are owned by each individual, especially early childhood. Research conducted by Ginting (2017) supports the idea that learning style is an important factor for improving students' thinking skills. Through learning styles that suit the preferences of each individual, effective and efficient learning can be achieved (H. Rahmawati & Muhroji, 2022).

Meanwhile, augmented reality learning media in the era of society 5.0 must have criteria that can adapt to the context or environment, be able to facilitate clear goals or use cases, and can become an attractive integrated technology platform. In this era, AR media must be developed with the principle of being easy to move and adapted to the surrounding environment (Schickler et al., 2020). Children can see visuals from AR not only after scanning one area. This visual can also be applied to the surrounding room. One of them is like AR on the IKEA Place application. Where visuals in AR can be adjusted in color, size, or position. So that active interaction can be carried out by users, and in the context of early childhood it can be more meaningful. Early childhood learning itself basically refers to concrete material (Oranç & Küntay, 2019). Where through AR materials that were previously impossible to bring

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into the classroom and integrated with learning can be presented. With the hope that the child can get a shadow that is close to the real object that is presented.

In the interactive multimedia learning media in the era of society 5.0, it seems that it will be increasingly abandoned if it does not have minimum criteria such as facilitating two-way communication, the manufacturing process does not use scratch (free programming language) to develop and test media, and is not integrated with technological innovations such as IoT, AI, big data, and robots. These three criteria are very important if you want to use interactive multimedia that is truly usable and of high quality for a long period of time. Because without good innovation, interactive multimedia can actually be replaced with media such as AR or games that are more fun. Abdulrahaman et al. (2020) in his research revealed that most of the purpose of making interactive multimedia is to attract the user's attention, while the success of interactive multimedia itself is different and depends on the targets set. So integration must be carried out by really paying attention to the needs of each target audience, in the context of early childhood, of course, you have to pay attention to the stages of development they have.

Various learning media with the basic principles of interaction in children have been made available. So actually, learning in early childhood education is ready to face society 5.0. However, all of the media that existing ones require improvement which comes not only from the realm of technology but also the skills that must be mastered in its application. In this research, the main limitation lies in the study which only discusses the learning media available in the scope of Indonesian and English. Then, due to limited resources, the sources that can be used only include the index that has been mentioned in the research methods section. The year in search is also limited with the aim that the media discussed remains relevant and does not deviate from its original purpose. This research does not examine further the pattern of media development from year to year, therefore this is also a limitation that needs to be studied further. However, this research produced important findings in the form of types and characteristics of learning media that can be utilized in efforts to adapt to society 5.0. The types of media obtained based on the study are in the form of games, digital storytelling, LMS, augmented reality, and interactive multimedia. Each type of learning media is expected to at least have characteristics that are adaptive, innovative, personalized, flexible, and integrated with various innovative devices such as IoT, AI, and big data.The suggestion for further research is to study technology-based learning media that is more focused on the realm of children with special needs. Then the expansion of the analysis includes more detailed learning websites such as YouTube and social media.

Conclusion

This research produced important findings in the form of types and characteristics of learning media that can be utilized in efforts to adapt to society 5.0. The types of media obtained based on the study are in the form of games, digital storytelling, LMS, augmented reality, and interactive multimedia. Each type of learning media is expected to at least have characteristics that are adaptive, innovative, personalized, flexible, and integrated with various innovative devices such as IoT, AI, and big data. Finally, this study also contributes to the understanding that the learning process must be fun, interesting, provide opportunities for children to try, interact, and explore the technology around them.

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